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### VASCULAR PLANTS FLORA OF THE RAILWAY GROUNDS OF ZDUŃSKA WOLA

**Abstract:** In the paper a list and general characterization of vascular plants flora recorded on railway grounds in the city of Zduńska Wola is presented. The great diversity of habitats within the railway grounds as well as their readiness to accept numerous introduced species result in a high variety of vascular plants there. This flora consists of 366 taxa.

**Key words:** flora, vascular plants, railway grounds, Zduńska Wola, Central Poland

#### 1. INTRODUCTION

The vascular plant flora of the railway grounds of the town of Zduńska Wola has not yet been the subject of complex research. Fairly abundant data on vascular plants occurrence on the railway grounds of this town is given by MOWSZOWICZ (1960, 1978) and SOWA (1971). The floristic investigation carried out on the railway grounds of Zduńska Wola in 1977–1981 enriched the list of taxa of this type of flora (SOWA, WARCHOLIŃSKA 1984). In that period 256 taxa of vascular plants were recorded in the area.

The diversity of railway habitats of Zduńska Wola is contributed to by the appearance, proliferation and settling of new colonizer plants, both of native as well as alien origin.

The main aim of the floristic research carried out in 2002–2004 was compiling an updated list of vascular plants occurring in diverse habitats of Zduńska Wola railway grounds and working out a general characterization of the investigated flora.

## 2. MATERIALS AND METHODS

Data contained in the studies cited in the „Introduction” and the results of investigations carried out in 2002–2004 were used to assess the state of the flora of Zduńska Wola railway grounds. On the basis of data analysis a systematic list of taxa occurring in the investigated flora of Zduńska Wola railway grounds was compiled and its general characterization was carried out.

The systematic arrangement of taxa of the list was accepted after SZAFER et al. (1976) while the botanic nomenclature after MIREK et al. (2002). Studies by JACKOWIAK (1990), JANOWSKA (2002), LATOWSKI (1981, 2004), MOWSZOWICZ (1975), RUTKOWSKI (1998), WARCHOLIŃSKA (1993, 2003, 2004, 2005) were also employed.

In the list of taxa, the following data were subsequently given before and after their Latin names:

- \* – Recorded plants in 2002–2004;
- Constancy (**Shl** – Short living plants, **Per** – Perennial plants);
- Life form (**M** – Megaphanerophytes, **N** – Nanophanerophytes, **Ch** – Woody chamaephytes, **C** – Herbaceous chamaephytes, **H** – Hemicryptophytes, **G** – Geophytes, **T** – Therophytes);
- Geographic-historical group (**Ap** – Apophytes, **A** – Archaeophytes, **Ep** – Epocophytes, **He** – Hemiagriophytes, **Ho** – Holoagriophytes, **Er** – Ergaziphygophytes, **Ef** – Ephemerophytes);
- Frequency classes (very rare, rare, rather frequent, frequent, common).

While determining the properties of vascular plants flora the following studies, among others, were employed: JACKOWIAK (1990), JANOWSKA (2002), KORNAŚ et al. (1959), KORNAŚ (1968), LATOWSKI (1981, 2004), MIREK et al. (2002), SZAFER et al. (1976), WARCHOLIŃSKA (2003, 2004, 2005), ZAJĄC, ZAJĄC (1975), ZARZYCKI et al. (2002).

## 3. RESULTS

### 3.1. List of taxa

#### *Polypodiaceae*

- \*1. *Athyrium filix-femina* (L.) Roth – Per, H, Ap, very rare
- \*2. *Dryopteris filix-mas* (L.) Schott – Per, H, Ap, very rare
- \*3. *Pteridium aquilinum* (L.) Kuhn – Per, G, Ap, rare

#### *Equisetaceae*

- 4. *Equisetum arvense* L. – Per, G, Ap, common
- \*5. *E. sylvaticum* L. – Per, G, Ap, rare
- \*6. *E. palustre* L. – Per, G, Ap, very rare

*Pinaceae*

- \*7. *Pinus sylvestris* L. – Per, M, Ap, rare

*Cupressaceae*

- \*8. *Juniperus communis* L. – Per, N, Ap, rare

*Betulaceae*

9. *Betula pendula* Roth – Per, M, Ap, rather frequent  
\*10. *Alnus glutinosa* (L.) Gaertn. – Per, M, Ap, very rare  
\*11. *Carpinus betulus* L. – Per, M, Ap, very rare  
\*12. *Corylus avellana* L. – Per, N, Ap, rare

*Fagaceae*

13. *Quercus robur* L. – Per, M, Ap, rare  
\*14. *Q. rubra* L. – Per, M, He, rare

*Salicaceae*

15. *Populus alba* L. – Per, M, Ap, rare  
16. *P. tremula* L. – Per, M, Ap, rather frequent  
17. *Salix fragilis* L. – Per, M, Ap, very rare  
\*18. *S. caprea* L. – Per, N, Ap, rare

*Cannabaceae*

19. *Cannabis sativa* L. – Shl, T, Er, rare

*Urticaceae*

20. *Urtica urens* L. – Shl, T, Ar, frequent  
21. *U. dioica* L. – Per, H, Ap, rather frequent

*Ulmaceae*

- \*22. *Ulmus laevis* Poll. – Per, M, Ap, very rare

*Polygonaceae*

- \*23. *Rumex maritimus* L. – Shl, T, Ap, very rare  
\*24. *R. conglomeratus* Murray – Per, H, Ap, very rare  
25. *R. obtusifolius* L. – Per, H, Ap, rare  
26. *R. crispus* L. – Per, H, Ap, frequent  
27. *R. acetosa* L. – Per, H, Ap, rather frequent  
28. *R. acetosella* L. – Per, G, Ap, frequent  
\*29. *Polygonum bistorta* L. – Per, G, Ap, very rare  
30. *P. amphibium* L. – Per, G, Ap, rare  
31. *P. persicaria* L. – Shl, T, Ap, common

- 32. *P. lapathifolium* L. subsp. *pallidum* (With.) Fr. – Shl, T, Ap, frequent
- 33. *P. lapathifolium* L. subsp. *lapathifolium*. – Shl, T, Ap, rare
- 34. *P. hydropiper* L. – Shl, T, Ap, rare
- \*35. *P. minus* Huds. – Shl, T, Ap, very rare
- 36. *P. aviculare* L. – Shl, T, Ap, common
- \*37. *Reynoutria sachalinensis* (F. Schmidt) Nakai – Per, G, Ep, very rare
- \*38. *R. japonica* Houtt. – Per, G, Ep, very rare
- 39. *Fallopia convolvulus* (L.) Á. Löve – Shl, T, Ar, common
- 40. *F. dumetorum* (L.) Holub – Shl, T, Ap, very rare
- 41. *Fagopyrum esculentum* Moench – Shl, T, Er, very rare

#### *Chenopodiaceae*

- 42. *Corispermum hyssopifolium* L. – Shl, T, Ep, very rare
- \*43. *Kochia laniflora* (S. G. Gmel.) Borbás – Shl, T, Ap, very rare
- \*44. *Chenopodium polyspermum* L. – Shl, T, Ap, very rare
- 45. *Ch. hybridum* L. – Shl, T, Ar, rare
- 46. *Ch. album* L. – Shl, T, Ap, common
- 47. *Ch. glaucum* L. – Shl, T, Ap, very rare
- \*48. *Atriplex hortensis* L. – Shl, T, Ep, very rare
- 49. *A. patula* L. – Shl, T, Ap, frequent
- 50. *Salsola kali* L. subsp. *ruthenica* (Iljin) Soó – Shl, T, Ep, very rare

#### *Amaranthaceae*

- 51. *Amaranthus caudatus* L. – Shl, T, Ef, very rare
- 52. *A. retroflexus* L. – Shl, T, Ep, frequent
- 53. *A. cruentus* L. – Shl, T, Er, very rare
- 54. *A. albus* L. – Shl, T, Ep, very rare
- \*55. *A. lividus* L. – Shl, T, Ep, rare

#### *Caryophyllaceae*

- \*56. *Dianthus deltoides* L. – Per, H, Ap, rare
- \*57. *Gypsophila muralis* L. – Shl, T, Ap, rare
- \*58. *Saponaria officinalis* L. – Per, H, Ap, rare
- 59. *Melandrium album* (Mill.) Garcke – Shl, H, Ap, frequent
- 60. *Silene vulgaris* (Moench) Garcke – Per, H, Ap, frequent
- 61. *Arenaria serpyllifolia* L. – Shl, T, Ap, rather frequent
- 62. *Stellaria media* (L.) Vill. – Shl, T, Ap, frequent
- 63. *S. graminea* L. – Per, H, Ap, rather frequent
- 64. *Cerastium arvense* L. – Per, C, Ap, frequent
- 65. *C. holosteoides* Fr. Emend. Hyl. – Per, C, Ap, frequent
- \*66. *Scleranthus perennis* L. – Per, H, Ap, rare
- 67. *S. annuus* L. – Shl, T, Ar, frequent



- 68. *Spergula arvensis* L. – Shl, T, Ar, frequent
- 69. *S. morisonii* Boreau – Shl, T, Ap, very rare
- 70. *Spergularia rubra* (L.) J. Presl et C. Presl – Shl, H, Ap, rather frequent
- 71. *Herniaria glabra* L. – Shl, H, Ap, rather frequent

#### *Euphorbiaceae*

- \*72. *Euphorbia peplus* L. – Shl, T, Ar, very rare
- \*73. *E. helioscopia* L. – Shl, T, Ar, rather frequent
- 74. *E. cyparissias* L. – Per, H, Ap, frequent
- 75. *E. esula* L. – Per, H, Ap, rather frequent

#### *Ranunculaceae*

- \*76. *Consolida regalis* S. F. Gray – Shl, T, Ar, very rare
- \*77. *Ranunculus bulbosus* L. – Per, G, Ap, rare
- 78. *R. repens* L. – Per, H, Ap, rather frequent
- 79. *R. acris* L. – Per, H, Ap, frequent

#### *Papaveraceae*

- 80. *Papaver argemone* L. – Shl, T, Ar, rare
- 81. *P. dubium* L. – Shl, T, Ar, rather frequent
- 82. *P. rhoeas* L. – Shl, T, Ar, rare
- 83. *P. somniferum* L. – Shl, T, Er, rare
- 84. *Chelidonium majus* L. – Per, H, Ap, frequent
- \*85. *Fumaria officinalis* L. – Shl, T, Ar, very rare

#### *Brassicaceae*

- 86. *Rorippa sylvestris* (L.) Besser – Per, H, Ap, rather frequent
- 87. *Barbarea vulgaris* R. Br. – Shl, H, Ap, very rare
- 88. *Cardaminopsis arenosa* (L.) Hayek – Shl, H, Ap, rare
- 89. *Matthiola incana* (L.) R. Br. – Shl, H, Er, very rare
- 90. *Sisymbrium officinale* (L.) Scop. – Shl, T, Ar, frequent
- 91. *S. altissimum* L. – Shl, H, Ep, rare
- 92. *S. austriacum* Jacq. – Shl, H, Ef, very rare
- 93. *S. loeselii* L. – Shl, T, Ep, frequent
- 94. *Descurainia sophia* (L.) Webb ex Prantl – Shl, T, Ar, common
- 95. *Arabidopsis thaliana* (L.) Heynh. – Shl, T, Ap, rather frequent
- 96. *Erysimum cheiranthoides* L. – Shl, T, Ar, rather frequent
- 97. *Brassica napus* L. – Shl, T, Er, very rare
- 98. *B. rapa* L. subsp. *oleifera* DC. – Shl, T, Er, very rare
- 99. *Erucastrum gallicum* (Willd.) O. E. Schultz – Shl, T, Ep, very rare
- 100. *Sinapis arvensis* L. – Shl, T, Ar, rare
- 101. *S. alba* L. – Shl, T, Er, very rare

- 102. *Diplotaxis muralis* (L.) DC. – Shl, T, Ep, rather frequent
- 103. *Alyssum alyssoides* (L.) L. – Shl, H, Ap, very rare
- 104. *Berteroa incana* (L.) DC. – Shl, T, Ap, common
- 105. *Erophila verna* (L.) Chevall. – Shl, T, Ap, frequent
- 106. *Armoracia rusticana* P. Gaertn. – Per, G, Ar, rather frequent
- 107. *Thlaspi arvense* L. – Shl, T, Ar, rare
- 108. *Lepidium campestre* (L.) R. Br. – Shl, T, Ar, very rare
- 109. *L. ruderales* L. – Shl, T, Ar, frequent
- 110. *L. densiflorum* Schrad. – Shl, T, Ep, very rare
- 111. *L. virginicum* L. – Shl, T, Ep, very rare
- 112. *Capsella bursa-pastoris* (L.) Medik. – Shl, T, Ar, common
- 113. *Rapistrum perenne* (L.) All. – Per, H, Ef, very rare
- 114. *Raphanus raphanistrum* L. – Shl, T, Ar, frequent
- 115. *R. sativus* L. – Shl, T, Er, rather frequent

#### *Resedaceae*

- 116. *Reseda lutea* L. – Shl, T, Ap, rare
- 117. *R. luteola* L. – Shl, T, Ar, very rare

#### *Violaceae*

- 118. *Viola tricolor* L. s. str. – Shl, T, Ap, frequent
- 119. *V. arvensis* Murray – Shl, T, Ar, frequent

#### *Clusiaceae*

- 120. *Hypericum humifusum* L. – Shl, T, Ap, very rare
- \*121. *H. perforatum* L. – Per, H, Ap, rather frequent

#### *Crassulaceae*

- 122. *Sedum acre* L. – Per, C, Ap, rather frequent

#### *Saxifragaceae*

- 123. *Saxifraga granulata* L. – Per, H, Ap, rare

#### *Rosaceae*

- \*124. *Rosa rugosa* Thunb. – Per, N, Ar, rare
- 125. *R. canina* L. – Per, N, Ap, rather frequent
- \*126. *Rubus saxatilis* L. – Per, H, Ap, rare
- \*127. *R. idaeus* L. – Per, N, Ap, rare
- 128. *R. caesius* L. – Per, N, Ap, frequent
- 129. *Potentilla intermedia* L. Non Wahlenb. – Per, H, Ep, very rare
- 130. *P. recta* L. – Per, H, Ap, very rare
- 131. *P. argentea* L. s. str. – Per, H, Ap, rather frequent

- \*132. *P. collina* Wibel s. str. – Per, H, Ap, rare
- 133. *P. reptans* L. – Per, H, Ap, very rare
- \*134. *P. erecta* (L.) Raeusch. – Per, H, Ap, very rare
- 135. *P. anserina* L. – Per, H, Ap, frequent
- 136. *Alchemilla monticola* Opiz – Per, H, Ap, very rare
- 137. *Geum urbanum* L. – Per, H, Ap, frequent
- \*138. *Agrimonia eupatoria* L. – Per, H, Ap, very rare
- 139. *Crataegus monogyna* Jacq. – Per, N, Ap, very rare
- 140. *Pyrus communis* L. – Per, M, Ar, very rare
- 141. *Sorbus aucuparia* L. Hedl. – Per, M, Ap, very rare
- \*142. *Prunus spinosa* L. – Per, N, Ap, very rare

#### *Fabaceae*

- \*143. *Lupinus polyphyllus* Lindl. – Per, H, He, very rare
- 144. *Lupinus luteus* L. – Shl, T, Er, very rare
- 145. *L. angustifolius* L. – Shl, T, Er, very rare
- \*146. *Medicago falcata* L. – Per, H, Ap, very rare
- 147. *M. sativa* L. – Per, H, Er, rather frequent
- 148. *M. lupulina* L. – Shl, T, Ap, frequent
- 149. *Melilotus alba* Medik. – Shl, H, Ap, frequent
- 150. *M. officinalis* (L.) Pall. – Shl, H, Ap, rather frequent
- 151. *Trifolium arvense* L. – Shl, T, Ap, rather frequent
- 152. *T. dubium* Sibth. – Shl, T, Ap, rare
- 153. *T. campestre* Schreb. – Shl, T, Ap, rather frequent
- 154. *T. aureum* Pollich – Shl, T, Ap, rather frequent
- 155. *T. repens* L. – Per, H, Ap, frequent
- 156. *T. pratense* L. – Per, H, Ap, rather frequent
- \*157. *T. medium* L. – Per, H, Ap, rare
- \*158. *Lotus uliginosus* Schkuhr – Per, H, Ap, rare
- 159. *L. corniculatus* L. – Per, H, Ap, frequent
- 160. *Robinia pseudacacia* L. – Per, M, He, rather frequent
- \*161. *Astragalus glycyphyllos* L. – Per, H, Ap, rare
- 162. *Coronilla varia* L. – Per, H, Ap, frequent
- \*163. *Ornithopus sativus* Brot. – Shl, T, Er, very rare
- 164. *Vicia hirsuta* (L.) S. F. Gray – Shl, T, Ar, frequent
- \*165. *V. terasperma* (L.) Schreb. – Shl, T, Ar, rather frequent
- 166. *V. cracca* L. – Per, H, Ap, frequent
- 167. *V. villosa* Roth – Shl, T, Ar, rather frequent
- \*168. *V. sepium* L. – Per, H, Ap, rare
- \*169. *V. sativa* L. – Shl, T, Ar, rare
- 170. *V. angustifolia* L. – Shl, T, Ar, frequent
- 171. *Lathyrus pratensis* L. – Per, H, Ap, rare

*Lythraceae*

172. *Lythrum salicaria* L. – Per, H, Ap, rare

*Onagraceae*

173. *Epilobium parviflorum* Schreb. – Per, H, Ap, rather frequent  
174. *Chamaenerion angustifolium* (L.) Scop. – Per, H, Ap, rare  
175. *Oenothera biennis* L. Ss. str. – Shl, H, Ap, frequent

*Malvaceae*

176. *Malva sylvestris* L. – Shl, H, Ar, rare  
177. *M. neglecta* Wallr. – Shl, H, Ar, frequent

*Tiliaceae*

- \*178. *Tilia cordata* Mill. – Per, M, Ap, very rare

*Oxalidaceae*

- \*179. *Oxalis fontana* Bunge – Per, G, Ep, rather frequent

*Geraniaceae*

180. *Geranium pratense* L. – Per, H, Ap, rare  
181. *G. pusillum* Burm. F. ex L. – Shl, T, Ar, frequent  
182. *Erodium cicutarium* (L.) L'Hér. – Shl, T, Ap, common

*Aceraceae*

183. *Acer pseudoplatanus* L. – Per, M, Ap, very rare  
184. *A. platanoides* L. – Per, M, Ap, rather frequent  
185. *A. negundo* L. – Per, M, He, rather frequent

*Hyppocastanaceae*

- \*186. *Aesculus hippocastanum* L. – Per, M, Er, rare

*Balsaminaceae*

- \*187. *Impatiens parviflora* DC. – Shl, T, Ho, rare

*Apiaceae*

- \*188. *Sium latifolium* L. – Per, H, Ap, very rare  
189. *Carum carvi* L. – Shl, H, Ap, rather frequent  
\*190. *Aegopodium podagraria* L. – Per, H, Ap, rather frequent  
191. *Pimpinella saxifraga* L. – Per, H, Ap, frequent  
192. *Aethusa cynapium* L. – Shl, T, Ar, rare  
193. *Heracleum sibiricum* L. – Per, H, Ap, frequent

194. *H. sphondylium* L. – Per, H, Ap, rather frequent  
195. *Peucedanum oreoselinum* (L.) Moench – Per, H, Ap, rare  
196. *Pastinaca sativa* L. – Shl, H, Ap, rather frequent  
197. *Daucus carota* L. – Shl, H, Ap, rather frequent  
\*198. *Anthriscus sylvestris* (L.) Hoffm. – Per, H, Ap, rather frequent  
\*199. *Chaerophyllum bulbosum* L. – Shl, T, Ap, very rare  
200. *Torilis japonica* (Houtt.) DC. – Shl, T, Ap, rather frequent

*Primulaceae*

201. *Lysimachia vulgaris* L. – Per, H, Ap, rare

*Convolvulaceae*

202. *Convolvulus arvensis* L. – Per, G, Ar, common

*Boraginaceae*

203. *Anchusa officinalis* L. – Shl, H, Ap, rare  
204. *A. arvensis* (L.) M. Bieb. – Shl, T, Ar, very rare  
205. *Symphytum officinale* L. – Per, H, Ap, very rare  
206. *Echium vulgare* L. – Shl, H, Ap, rather frequent  
207. *Lithospermum arvense* L. – Shl, T, Ar, rather frequent  
208. *Myosotis stricta* Link ex Roem. & Schult. – Shl, T, Ap, frequent  
209. *M. ramosissima* Rochel – Shl, T, Ap, very rare  
210. *M. arvensis* (L.) Hill – Shl, T, Ar, rather frequent

*Solanaceae*

211. *Hyoscyamus niger* L. – Shl, T, Ar, very rare  
212. *Solanum nigrum* L. – Shl, T, Ar, rare  
\*213. *S. tuberosum* L. – Per, G, Er, very rare  
\*214. *Datura stramonium* L. – Shl, T, Ep, very rare

*Scrophulariaceae*

- \*215. *Verbascum thapsus* L. – Shl, H, Ap, rare  
216. *V. densiflorum* Bertol. – Shl, H, Ap, rare  
217. *V. nigrum* L. – Shl, H, Ap, frequent  
218. *Linaria vulgaris* Mill. – Per, G, Ap, frequent  
\*219. *Chaenorhinum minus* (L.) Lange – Shl, T, Ap, very rare  
220. *Scrophularia nodosa* L. – Per, G, Ap, very rare  
221. *Veronica chamaedrys* L. – Per, C, Ap, frequent  
222. *V. serpyllifolia* L. – Per, H, Ap, rather frequent  
\*223. *V. arvensis* L. – Shl, T, Ar, rather frequent  
224. *V. verna* L. – Shl, T, Ap, rare



- \*225. *V. dillenii* Crantz – Shl, T, Ap, rare
- 226. *V. persica* Poir. – Shl, T, Ep, frequent
- 227. *Euphrasia rostkoviana* Hayne – Shl, T, Ap, rare
- \*228. *E. stricta* D. Wolff ex J. F. Lehm. – Shl, T, Ap, very rare
- 229. *Odontites serotina* (Lam.) Rechb. s. str. – Shl, T, Ap, rare
- 230. *O. verna* (Bellardi) Dumort. – Shl, T, Ar, rare

#### Lamiaceae

- 231. *Glechoma hederacea* L. – Per, H, Ap, frequent
- 232. *Prunella vulgaris* L. – Per, H, Ap, rare
- 233. *Galeopsis tetrahit* L. – Shl, T, Ap, rather frequent
- 234. *G. bifida* Boenn. – Shl, T, Ap, frequent
- 235. *Lamium purpureum* L. – Shl, T, Ar, frequent
- 236. *L. amplexicaule* L. – Shl, T, Ar, rather frequent
- 237. *Stachys palustris* L. – Per, G, Ap, rare
- 238. *Leonurus cardiaca* L. – Per, H, Ar, rare
- 239. *Ballota nigra* L. – Per, H, Ar, rather frequent
- 240. *Salvia verticillata* L. – Per, H, Ap, very rare
- 241. *Clinopodium vulgare* L. – Per, H, Ap, very rare
- 242. *Acinos arvensis* (Lam.) Dandy – Shl, T, Ap, rare
- 243. *Thymus pulegioides* L. – Per, C, Ap, rare
- 244. *T. serpyllum* L. Emend. Fr. – Per, C, Ap, rather frequent
- 245. *Mentha arvensis* L. – Per, G, Ap, frequent

#### Plantaginaceae

- 246. *Plantago major* L. – Per, H, Ap, frequent
- 247. *P. intermedia* Gilib. – Per, H, Ap, rare
- 248. *P. media* L. – Per, H, Ap, very rare
- 249. *P. lanceolata* L. – Per, H, Ap, frequent

#### Oleaceae

- \*250. *Syringa vulgaris* L. – Per, N, Er, very rare
- \*251. *Ligustrum vulgare* L. – Per, N, Er, very rare

#### Rubiaceae

- 252. *Galium verum* L. s. str. – Per, H, Ap, rather frequent
- 253. *G. mollugo* L. – Per, H, Ap, frequent
- 254. *G. aparine* L. – Shl, T, Ap, rather frequent

#### Caprifoliaceae

- 255. *Sambucus nigra* L. – Per, N, Ap, rare
- 256. *Symphoricarpos albus* (L.) S.F. Blake – Per, N, Er, very rare

*Dipsacaceae*

257. *Scabiosa ochroleuca* L. – Per, H, Ap, very rare  
258. *Knautia arvensis* (L.) J. M. Coult. – Per, H, Ap, rather frequent

*Cucurbitaceae*

- \*259. *Sicyos angulata* L. – Shl, T, He, very rare

*Campanulaceae*

- \*260. *Jasione montana* L. – Shl, H, Ap, rare  
261. *Campanula rapunculoides* L. – Per, G, Ap, very rare  
262. *C. patula* L. – Per, H, Ap, rare

*Asteraceae*

- \*263. *Solidago virgaurea* L. s. str. – Per, H, Ap, rare  
\*264. *S. canadensis* L. – Per, H, He, frequent  
265. *S. gigantea* Aiton – Per, H, He, rather frequent  
\*266. *Bellis perennis* L. – Per, H, Ap, rare  
267. *Conyza canadensis* (L.) Cornquist – Shl, T, Ep, common  
\*268. *Erigeron acris* L. – Shl, H, Ap, rare  
\*269. *E. annuus* (L.) Pers. – Per, H, He, rare  
270. *Helianthus annuus* L. – Shl, T, Er, very rare  
\*271. *Cosmos bipinnatus* Cav. – Shl, T, Er, very rare  
272. *Galinsoga parviflora* Cav. – Shl, T, Ep, frequent  
273. *G. ciliata* (Raf.) S. F. Blake – Shl, T, Ep, rare  
274. *Anthemis arvensis* L. – Shl, T, Ar, frequent  
\*275. *A. ruthenica* M. Bieb. – Shl, T, Ar, very rare  
\*276. *A. cotula* L. – Shl, T, Ar, rare  
\*277. *Achillea ptarmica* L. – Tr, H, Ap, rare  
278. *A. millefolium* L. – Per, H, Ap, common  
279. *Chamomilla suaveolens* (Pursh) Rydb. – Shl, T, Ep, frequent  
280. *Matricaria maritima* L. subsp. *indora* (L.) Dostal – Shl, T, Ar, rather frequent  
281. *Leucanthemum vulgare* Lam. s. str. – Per, H, Ap, rather frequent  
282. *Tanacetum vulgare* L. – Per, H, Ap, frequent  
283. *Artemisia absinthium* L. – Per, Ch, Ap, rather frequent  
284. *A. vulgaris* L. – Per, H, Ap, rather frequent  
285. *A. austriaca* Jacq. – Per, H, Ep, very rare  
286. *A. campestris* L. – Per, Ch, Ap, rather frequent  
287. *Tussilago farfara* L. – Per, G, Ap, rare  
288. *Senecio vulgaris* L. – Shl, T, Ar, common  
289. *S. viscosus* L. – Shl, T, Ap, rare  
290. *S. vernalis* Waldst. & Kit. – Shl, T, Ep, rather frequent

291. *S. jacobaea* L. – Per, H, Ap, frequent  
292. *Arctium tomentosum* Mill. – Shl, H, Ap, frequent  
293. *A. lappa* L. – Shl, H, Ap, frequent  
\*294. *A. minus* (Hill) Bernh. – Shl, H, Ap, rather frequent  
295. *Carduus acanthoides* L. – Shl, H, Ar, very rare  
296. *Cirsium vulgare* (Savi) Ten. – Shl, H, Ap, rare  
297. *C. arvense* (L.) Scop. – Per, G, Ap, common  
298. *Onopordum acanthium* L. – Shl, H, Ar, very rare  
299. *Centaurea scabiosa* L. – Per, H, Ap, rare  
300. *C. stoebe* L. – Shl, H, Ap, frequent  
301. *C. cyanus* L. – Shl, T, Ar, very rare  
302. *C. jacea* L. – Per, H, Ap, rather frequent  
303. *Cichorium intybus* L. – Per, H, Ar, rather frequent  
304. *Lapsana communis* L. – Shl, T, Ap, rare  
\*305. *Hypochoeris radicata* L. – Per, H, Ap, rare  
\*306. *H. glabra* L. – Shl, T, Ap, rather frequent  
307. *Tragopogon pratensis* L. – Shl, H, Ap, frequent  
308. *Leontodon autumnalis* L. – Per, H, Ap, frequent  
\*309. *L. hispidus* L. – Per, H, Ap, rare  
310. *Taraxacum officinale* F. H. Wigg. – Per, H, Ap, common  
311. *Sonchus oleraceus* L. – Shl, T, Ar, rather frequent  
312. *S. asper* (L.) Hill – Shl, T, Ar, rather frequent  
313. *S. arvensis* L. – Per, G, Ap, common  
\*314. *Lactuca serriola* L. – Shl, H, Ar, rather frequent  
315. *Crepis biennis* L. – Shl, H, Ap, rare  
316. *C. tectorum* L. – Shl, T, Ap, rather frequent  
317. *Hieracium pilosella* L. – Per, H, Ap, frequent

#### Liliaceae

- \*318. *Allium vineale* L. – Per, G, Ap, rare  
\*319. *Ornithogallum umbellatum* L. – Per, G, Ap, very rare  
320. *Asparagus officinalis* L. – Per, G, Ap, very rare

#### Juncaceae

321. *Juncus bufonius* L. – Shl, T, Ap, rather frequent  
\*322. *J. tenuis* Willd. – Per, H, Ep, rare  
\*323. *J. conglomeratus* L. Emend. Leers – Per, H, Ap, rare  
324. *Luzula campestris* (L.) DC. – Per, H, Ap, rather frequent

#### Cyperaceae

325. *Carex hirta* L. – Per, G, Ap, rather frequent

*Poaceae*

326. *Digitaria ischaemum* (Schreb.) H. L. Mühl. – Shl, T, Ar, rather frequent  
327. *Echinochloa crus-galli* (L.) P. Beauv. – Shl, T, Ar, rare  
328. *Setaria pumila* (Poir.) Roem. & Schult. – Shl, T, Ar, rather frequent  
329. *S. viridis* (L.) P. Beauv. – Shl, T, Ar, rather frequent  
330. *Anthoxanthum odoratum* L. – Per, H, Ap, rather frequent  
\*331. *A. aristatum* Boiss. – Shl, T, Ep, rare  
332. *Phleum pratense* L. – Per, H, Ap, rather frequent  
\*333. *Alopecurus pratensis* L. – Per, H, Ap, rare  
334. *Apera spica-venti* (L.) P. Beauv. – Shl, T, Ar, rare  
335. *Agrostis stolonifera* L. – Per, H, Ap, frequent  
336. *A. capillaris* L. – Per, H, Ap, rare  
\*337. *Calamagrostis epigejos* (L.) Roth – Per, G, Ap, rather frequent  
\*338. *Holcus mollis* L. – Per, H, Ap, rather frequent  
339. *H. lanatus* L. – Per, H, Ap, rare  
340. *Corynephorus canescens* (L.) P. Beauv. – Per, H, Ap, rare  
341. *Avena sativa* L. – Shl, T, Er, very rare  
342. *Arrhenatherum elatius* (L.) P. Beauv. ex J. Presl & C. Presl. – Per, H, Ap, rare  
\*343. *Phragmites australis* (Cav.) Trin. ex Steud. – Per, G, Ap, very rare  
344. *Eragrostis minor* Host – Shl, T, Ep, very rare  
345. *Cynosurus cristatus* L. – Per, H, Ap, very rare  
346. *Dactylis glomerata* L. – Per, H, Ap, rather frequent  
347. *Poa annua* L. – Shl, T, Ap, frequent  
348. *P. compressa* L. – Per, G, Ap, very rare  
349. *P. trivialis* L. – Per, H, Ap, rather frequent  
350. *P. pratensis* L. – Per, H, Ap, rather frequent  
351. *Puccinellia distans* (Jacq.) Parl. – Per, H, Ap, very rare  
\*352. *Bromus inermis* Leyss. – Per, H, Ap, rather frequent  
\*353. *B. sterilis* L. – Shl, T, Ar, rare  
354. *B. tectorum* L. – Shl, T, Ar, frequent  
355. *B. hordeaceus* L. – Shl, T, Ap, frequent  
\*356. *B. carinatus* Hook & Arn. – Per, H, Ep, rare  
357. *Festuca rubra* L. s. str. – Per, H, Ap, rare  
358. *F. pratensis* Huds. – Per, H, Ap, rather frequent  
359. *Lolium perenne* L. – Per, H, Ap, common  
360. *L. multiflorum* Lam. – Per, H, Ep, rare  
361. *Elymus repens* (L.) Gould – Per, G, Ap, common  
362. *Triticum aestivum* L. – Shl, T, Er, rare  
363. *Secale cereale* L. – Shl, T, Er, rare  
364. *Hordeum vulgare* L. – Shl, T, Er, rare  
365. *H. murinum* L. – Shl, T, Ar, rare  
366. *Zea mays* L. – Shl, T, Er, very rare

### 3.2. The general characterization of the vascular plants flora of the railway grounds of Zduńska Wola

The flora of vascular plants of the Zduńska Wola railway grounds is rich. At present it comprises 366 taxa, which belong to 53 families. *Compositae* (55 taxa), *Gramineae* (41 taxa), *Cruciferae* (30 taxa), *Papilionaceae* (29 taxa), *Polygonaceae* (19 taxa), *Rosaceae* (19 taxa), *Caryophyllaceae* (16 taxa), *Scrophulariaceae* (16 taxa), *Labiatae* (15 taxa) and *Umbelliferae* (13 taxa) are the families that are richest in taxa. They comprise a total of 253 (69.1%) vascular plants of the investigated flora.

In years 2002–2004 recorded 102 new plants (see “List of taxa” – \*).

Vascular plants of the very rare (94 taxa – 25.6%) and rare groups (102 taxa – 27.9%) were most frequently recorded. They constituted a total of 196 (53.5%) taxa. The interesting species of these groups are, e.g.: *Rumex maritimus*, *Reynoutria sachalinenses*, *Reseda lutea*, *R. luteola*, *Aethusa cynapium*, *Anchusa arvensis*, *Leonurus cardiaca*, *Lactuca serriola*. The other groups comprised, respectively: that of rather frequent – 84 (23.3%) taxa, of frequent – 68 (18.6%) taxa, of common – 18 (4.9%) taxa.

In the vascular plants flora of the Zduńska Wola railway grounds perennial plants dominated (186 taxa – 50.9%). As regards life forms plants of the group of hemicryptophytes (151 taxa – 41.3%) and therophytes (146 taxa – 39.9%) dominated. The group of geophytes comprised 30 (8.2%), of megaphanerophytes 18 (4.9%), and of nanophanerophytes 13 (3.6%) taxa. Only 8 taxa (2.2%) belonged to the other groups; 2 to woody chamaephytes (0.6%) and 6 to herbaceous chamaephytes (1.6%).

Plants of native origin (apophytes) constituted the most abundant group (233 taxa – 63.7%) among the geographic-historical groups. *Equisetum arvense*, *Polygonum aviculare*, *Chenopodium album*, *Berteroa incana*, *Erodium cicutarium*, *Taraxacum officinale*, *Sonchus arvensis*, *Lolium perenne*, *Elymus repens* belonged, among others, to the most common apophytes. Plants that belonged to the archaeophytes (67 taxa – 18.3%) were frequently and plants that belonged to the epocophytes (29 taxa – 7.9%) and ergaziophygophytes (25 taxa – 6.8%) groups rather frequently noted. Plants of the holoagriophytes (1 taxa – 0.3%), ephemerophytes (3 taxa – 0.8%) and hemiagriophytes (8 taxa – 2.2%) groups were very rarely and rarely recorded. *Hyoscyamus niger*, *Carduus acanthoides*, *Onopordum acanthium*, *Lactuca serriola* from the group of archaeophytes, and *Corispermum hyssopifolium*, *Salsola kali*, *Amaranthus caudatus*, *A. albus*, *Datura stramonium* and *Eragrostis minor* from the group of epocophytes were those that should be mentioned as interesting in the group of antropophytes.



#### 4. DISCUSSION

The vascular plants flora of the Zduńska Wola railway grounds is rich. At present, it comprises 366 taxa, belonging to 53 families. Its richness is mostly affected by diverse habitat conditions and spatial arrangement and size areas of these habitats. Besides, by the vicinity of various communities, mainly ruderal and seminatural.

The characteristic distinguishing features of the investigated flora are attributable to very rare and rare plants (196 taxa – 53.5%). *Corispermum hyssopifolium*, *Reseda lutea*, *R. luteola*, *Anchusa arvensis*, *Hyoscyamus niger*, *Datura stramonium*, *Scabiosa ochroleuca*, *Carduus acanthoides*, *Lactuca serriola*, *Eragrostis minor*, *Cynosurus cristatus*, *Puccinellia distans* belong, among others, to the interesting species of these groups. Plants of the common group (18 taxa – 4.9%), e.g. *Equisetum arvense*, *Polygonum aviculare*, *Fallopia convolvulus*, *Chenopodium album*, *Berteroa incana*, *Erodium cicutarium*, *Achillea millefolium*, *Taraxacum officinale*, *Lolium perenne*, *Elymus repens* had the lowest share in the analysed flora.

Note also the plants of native origin (apophytes). They constituted the group that was richest in plants (233 taxa – 63.7%). *Kochia laniflora*, *Agri- monia eupatoria*, *Trifolium fragiferum*, *Anthyllis vulneraria*, *Astragalus cicer*, *Lysimachia mummularia*, *Chaenorhinum minus*, *Scabiosa ochroleuca*, *Cynosurus cristatus* should be mentioned among the groups of very rare and rare species.

The investigation results presented in the present study may be used in the future as a basis for comparative analyses of railway grounds floras in Central Poland, as well as the vascular plants flora of the Zduńska Wola railway grounds.

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